TESTING OF DYNAMIC TRADE-OFF THEORY ON LEVERAGE DECISION

Septianti Chairunnisa
Rachmat Sudarsono
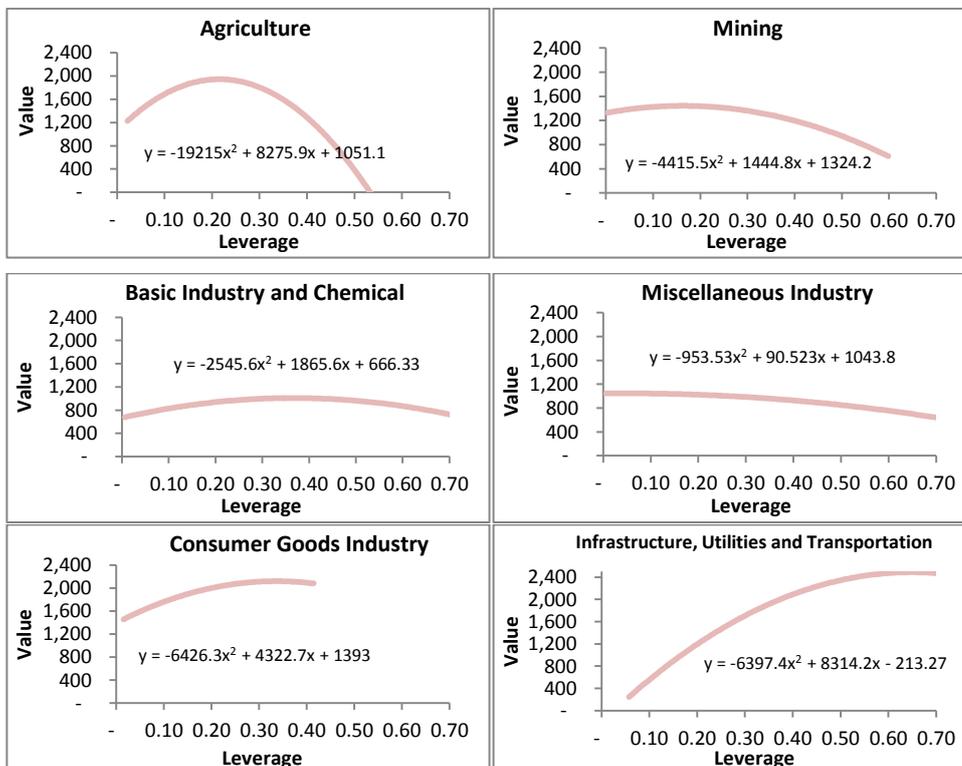Benny Budiawan Tjandrasa

ABSTRACT

This study aims to investigate the dynamic model on leverage decisions of non-financial listed firms in Indonesia, through identification of target leverage and speed of adjustment as characteristics of dynamic trade-off theory. Partial adjustment model is used and estimated through generalized method of moments. Multicollinearity test is conducted as diagnostic test for the estimation model. Non-financial firms in Indonesia do pursue target leverage constructed by firm-specific factors such as profitability, liquidity, and tangibility. Meanwhile, non-debt tax shield, business risk and size do not significantly affect leverage decision. The adjustment toward the target defines the symmetric speed adjustment of 78.05% across the firms. The result of this study contributes to analyze leverage decision of non-financial firm in Indonesia by using dynamic model with more realistic assumption and more advanced method in order to offer a deeper insight regarding firms leverage behavior.

Key words: Dynamic Trade-Off Theory, Target Leverage, Speed of Adjustment, Partial Adjustment Model

Introduction

Debt and equity financing is an activity to support the firms overall operations. In Indonesia, as stated by Bank of Indonesia (2016), there is an increasing trend of foreign debt in non-financial listed companies by 29% in 2012; 18% in 2013; 12% in 2014; 3% in 2015. This trend urges government to revise the policy regarding prudential act in managing foreign debt for non-bank companies to minimize bankruptcy risk that might lead to economic downturn. This indicates the risk of default that follows behind the loan. Even though such risk exists, this does not mean that firms should be discouraged to increase its debt. Any financing policy should consider the optimal combination of debt and equity that will maximize the firms' value. The graphs below give a brief description of the relationship between leverage and firms value -measured by share price per year- of non-financial listed companies in Indonesia.

Figure I: Leverage and Firms Value

Agriculture: $y = -19215x^2 + 8275.9x + 1051.1$

Mining: $y = -4415.5x^2 + 1444.8x + 1324.2$

Basic Industry and Chemical: $y = -2545.6x^2 + 1865.6x + 666.33$

Miscellaneous Industry: $y = -953.53x^2 + 90.523x + 1043.8$

Consumer Goods Industry: $y = -6426.3x^2 + 4322.7x + 1393$

Infrastructure, Utilities and Transportation: $y = -6397.4x^2 + 8314.2x - 213.27$

Trade, Services, and Investment
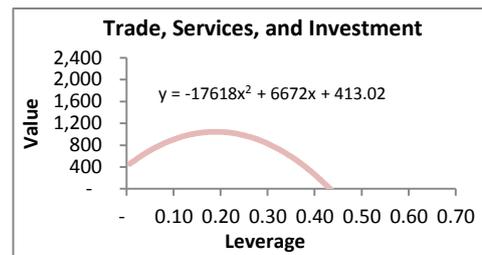
$y = -17618x^2 + 6672x + 413.02$

Figure 1.1 shows the relationship between leverage and firms' value for each sector of non-financial listed firms in Indonesia. Agriculture, with 22% target leverage optimal, earns maximum value at Rp 1,942.-. 65.5% firm-year observation is under its optimal point, showing that more companies increase leverage while the impact of such decision does not enhance the value. In mining sector, target leverage optimal is at 16%. Despite the lower level of target leverage optimal, 52.4% observation firm-year are still under the optimal point that indicate more firms have unused debt capacity. Another similar event found in the rest sectors, such as basic industry and chemical; consumer goods; infrastructure, utility and transportation; trade, service and investment shows that more firms do not maximize the benefit of debt financing with underlevered observation amounted to $\geq$ 50%. These various pattern of leverage-value relationship can be explained based on several capital structure theory as rationale for such decision.

Trade-off theory chooses debt as primary source of financing because of tax savings and lower cost of financing that is expected to enhance the firms' value (Kraus & Litzenberger, 1973). However, leverage decision should also consider the potential risk of distress and bankruptcy that follows behind. Several past studies revealed various results regarding leverage determinants. Profitability and liquidity are found to positively affect leverage (Zhang, 2010; Nunkoo & Boateng, 2010). These ratios indicate the firms' ability to pay the loan principal and interest. Tangibility and firms' size, represented the firms' collateral, are also found significantly affect leverage in positive manner (Tsoy & Heshmati, 2017; Versmissen & Zietz, 2017). The negative effect on leverage is found in non-debt tax shield as a deductible expense aside from interest that provides benefit of tax savings (Cortez & Susanto, 2012).

In addition to previous theory, pecking order theory gives different thoughts on hierarchy of financing sources. Having taken asymmetric information into consideration, pecking order theory prioritizes internal over external financing (Gitman & Zutter, 2012; Brigham & Ehrhardt, 2014). Firms are expected to use retained earnings as primary sources, add loan as second layer funding and issue stock as the last resort. According to this theory, high profitability as well as high liquidity firms are expected to generate sufficient income that lessens the external financing. Thus, it will result in low leverage (Chakraborty, 2010; Alom, 2013). These findings are the opposite of what trade-off theory has suggested before.

Apart from the capital structure theory, as an underlying perspective for explaining leverage decision, earlier studies regarding leverage decision were mainly focus on analysis through static model with assumption that firms are always on its optimal leverage. This assumption is considered unrealistic and provokes critical thinking that supports the dynamic model of leverage behavior. Unlike static model, dynamic assumption believes that firms have their desired target leverage optimal, thus leverage decision will change overtime to achieve its target (Ameer, 2013). In the adjustment process, speed of adjustment will measure how much actual-desired leverage gap has been filled within a period. It is also said that the adjustment will move in certain range because of rebalancing act used to keep the leverage decision on track with changes in the target leverage constructed by several firms' financial indicator (Oztekin & Flannery, 2012).

Considering increasing trends of debt financing in overlevered firms that is no more creating additional value for the firms while unused debt capacity on underlevered firms that is invariable regardless such trends exist, thus what factors affecting the leverage decision of non-financial listed firms in Indonesia? Furthermore, do these firms adjust to its target leverage optimal and how fast the firms are able to close the gap between actual and desired leverage?

This study aims to give insight on leverage behavior of non-financial listed firms' leverage from perspective of dynamic trade off theory through the identification of firms' leverage determinant factors and speed of adjustment. Non-financial listed firm in Indonesia during 2011-2015 are chosen as an object research. Indonesia is chosen because of its current state as emerging markets-which the financial markets are still imperfect and inefficient thus it will be highly expected to have non-optimal leverage decision (Eldomiaty, 2007). Meanwhile, non-financial listed firms are selected because the increasing trend of debt financing occurs during 2011-2015.

The rest of the paper is organized as follows: Section II gives a brief description of the literature review while section III presents the research methodology. The last two sections contain of result and discussion and conclusion.

Literature Review

Trade off theory signifies the point that firms face trade-off between benefit (tax saving; less costly external financing) and cost of debt financing (distress and bankruptcy risk) (Gitman & Zutter, 2012). The static assumption embarked the earlier testing of trade off theory on leverage decision. It claims that firms are always on its target leverage optimal, thus actual leverage is said to be equal to target leverage ($Lev_t = Lev^*_t$). Fischer, Heinkel, and Zechner (1989) argue that if the static assumption is assumed to be true, thus all similar firms will result in a similar leverage decision. However, the so-called similar firm, in fact, could have a huge difference on leverage point that move in certain range of leverage over period in order to adjust its leverage to its target

leverage optimal and close the actual-desired leverage gap. Therefore, in dynamic model, the actual leverage is not equal to the target leverage optimal ($Lev_t \neq Lev^*_t$).

Several past studies (Ting, 2016; Haron, 2016; Versmissen & Zietz, 2017) found several determinants of target leverage optimal in dynamic model of leverage decision. These determinants could be expressed as follows.

$$Lev *_{i,t} = f(X_{i,t}) = \beta_1 Prof_{i,t} + \beta_2 Liq_{i,t} + \beta_3 Tang_{i,t} + \beta_4 NDTS_{i,t} + \beta_5 BR_{i,t} + \beta_5 SIZE_{i,t} + \varepsilon_{i,t} \quad (1)$$

, where:
$Lev^*_{i,t}$ = target leverage optimal;
$Prof_{i,t}$ = profitability;
$Liq_{i,t}$ = liquidity;
$Tang_{i,t}$ = tangibility
$NDTS_{i,t}$ = non-debt tax shield;
$BR_{i,t}$ = bankruptcy risk;
β_k = coefficient.

Thus, the relationship between leverage actual and target leverage optimal could be described in the following equations.

$$Lev_{i,t} - Lev_{i,t-1} = \delta(Lev *_{i,t} - Lev_{i,t-1}) \quad (2)$$

$$Lev_{i,t} = Lev_{i,t-1} - \delta Lev_{i,t-1} + \delta Lev *_{i,t} \quad (3)$$

$$Lev_{i,t} = (1 - \delta)Lev_{i,t-1} + \delta\left(\beta_1 Prof_{i,t} + \beta_2 Liq_{i,t} + \beta_3 Tang_{i,t} + \beta_4 NDTS_{i,t} + \beta_5 BR_{i,t} + \beta_6 Size_{i,t} + \varepsilon_{i,t}\right) \quad (4)$$

$$Lev_{i,t} = \lambda_{01} Lev_{i,t-1} + \lambda_1 Prof_{i,t} + \lambda_2 Liq_{i,t} + \lambda_3 Tang_{i,t} + \lambda_4 NDTS_{i,t} + \lambda_5 BR_{i,t} + \lambda_6 Size_{i,t} + \mu_{i,t} \quad (5)$$

, where:
δ = speed of adjustment;
β_k = coefficient;
$\lambda_0 = 1-\delta$;
$\lambda_k = \delta\beta_k$;
$\mu_{i,t} = \delta\varepsilon_{i,t}$;
$Lev_{i,t}$ = leverage;
$Lev_{i,t-1}$ = lagged leverage;
$Lev^*_{i,t}$ = target leverage optimal;
$Prof_{i,t}$ = profitability;
$Liq_{i,t}$ = liquidity;
$Tang_{i,t}$ = tangibility;
$NDTS_{i,t}$ = non-debt tax shield;
$BR_{i,t}$ = bankruptcy risk;
$Size_{i,t}$ = firm size.

Based on equation (2) static model could be said to always fully adjust its leverage to the target, thus it results in speed of adjustment value of 1.0. It means that firms could always close 100% gap between actual and desired leverage for each period. In other hand, dynamic model, according to Widarjono (2016), stated that speed of adjustment value falls between 0 and 1 because of its partial adjustment. Therefore, it is expected that firms do not adjust perfectly to the target. This condition defines the dynamic model as partial adjustment model. Thus, by substituting the equation with its variable or proxy, equation (5) is constructed and defines the dynamic model of leverage decision analyzed throughout this study.

Lagged leverage

Lagged leverage is the independent variable used as the indicator whether the firms pursue its target leverage or not. If so, the coefficient of this variable will be used to calculate the degree of speed of adjustment (δ) across the firms. Lagged leverage confirms the implementation of dynamic trade off theory as it identifies the existence of target leverage optimal that differs to firms' actual leverage and adjustment process with certain value of speed of adjustment (Ting, 2016; Haron, 2016). Thus, the first hypothesis proposes in the study is that:

H1 : Lagged leverage positively affects leverage

Profitability

Ross, Westerfield, Jaffe and Jordan (2016) states that profitability is a tool to measures how efficient the firms use its asset in operational activities. Trade-off theory states that high profitability firms increase the debt capacity by considering the ability to repay the loan. Manager with trade off mindset will utilize the firms' debt capacity in order to maximize the benefit from debt financing. Thus, high profitability will encourage the firms to increase the debt portion in its financing activities (Zhang, 2010; Nunkoo & Boateng, 2010). Other studies found negative effect of profitability on debt ratios, thus indicating the implementation of pecking order theory (Memon, Rus & Ghazali, 2015; Koksal & Orman, 2015). Inconsistencies in results of the relationship between profitability and debt ratio across different studies become the reasons to reconsider this firm specific factor as determinants of leverage in this dynamic model analysis. Therefore, considering the objective of testing the dynamic trade-off theory, the next hypothesis of the study is that:

H2   :   Profitability positively affects leverage

Liquidity

Keown, Martin and Petty (2014) defines liquid assets as the type of assets that is easy and quick to convert inti cash in current market value. Liquidity acts similar to profitability in term of enhancing the debt capacity. High liquid firms are expected to be able to generate high cash inflow that increase the ability to pay off the debt and reduce the default risk (Kaur & Rao, 2009). Thus, higher liquidity is assumed to give higher leverage point because of larger debt capacity. In this determinant factor, other studies found the opposite effect of liquidity on leverage (Alipour, Mohammadi & Derakhshan, 2015; Ghasemi & Razak, 2016). Supported by pecking order theory, liquidity also signifies the ability to generate internal funding. This cause negative effect of liquidity on leverage decision because higher liquidity provides more cash flow to increases the availability of internal funding that decreases the needs to use external sources, including debt financing. So, considering the trade-off idea, the study hypothesizes that:

H3   :   Liquidity positively affects leverage

Tangibility

Tangibility represents degree of collateral that could decrease the default risk. The existence of fixed asset is often used to assess firm credit worthiness and acts as collateral on loans or invested capital. Collateral ensures the lenders that in default state, they still could cover the loss from the market value of collateral assets. Therefore, positive effect of tangibility on leverage is expected and confirms with several previous studies (Nunkoo & Boateng, 2010; Arvanitis, Tzigkounaki, Stamatopoulos & Thalassinos, 2012; Versmissen & Zietz, 2017). This also supports the trade-off theory which suggests that larger portion of tangible assets enable firms to enlarge its debt portion in order to maximize benefit from tax savings. However, Olakunle and Oni (2014) found that tangibility does not significantly affect leverage decision. The hypothesis for tangibility in this study is that:

H4   :   Tangibility positively affects leverage

Non-debt Tax Shield

Interest expense is not the only deductible expense that provides tax saving. Several other expenses, such as depreciation expense, amortization expense, and preferred dividends, also give the similar benefit without increasing financial risk. This alternative is known as non-debt tax shield. Hence, the existence of non-debt tax shield is expected to substitute interest expense in term of tax saving benefit and reduces the interest bearing loan (Cortez & Susanto, 2012). Thus, the proposed hypothesis in this study is that:

H5   :   Non-debt tax shield negatively affects leverage

Bankruptcy risk

Ross, Westerfield, Jaffe and Jordan (2016) define bankruptcy as takeover of firms' asset ownership from shareholders to debt holders. The ability to pay off the debt could be represented by comparing the income with the regular payment of interest for each period, thus this variable uses interest coverage as proxy of bankruptcy risk. Potential distress represented by interest coverage signify the increases in bankruptcy risk of the firms that discourage both the firms to add its debt portion and creditor to grants the loans proposed by the firms. Akhtar (as cited in Syarkani, 2016) found the significant effect of interest coverage on firms' leverage decision. Therefore, the study hypothesizes that:

H6   :   Bankruptcy risk negatively affects leverage

Firms Size

Firm size acts as variable control in this study. Large firms are expected to have low default risk resulted from less asymmetrical information and large collateral assets. In addition, larger firms are also expected to have stable cash flow and better access to financing sources (Huang & Song, 2006). Therefore, larger firms are likely to have larger portion of debt compared to smaller

companies (Zhang, 2010). However, Olakunle and Jones (2014) found that size do not significantly affect leverage decision. This inconsistency on findings regarding the relationship between firm size and leverage decision causes this study to include the firm size as variable control of leverage determinants factors.

Research Methodology

This study will analyze 100 non-financial listed firms in Indonesia during 2011-2015 that fit the criteria: not delisting or backdoor listing during study period; issuing complete financial statement. Secondary data used in the study are collected from firms' annual financial statement and Indonesia Capital Market Directory. Data could be accessed through URL: www.idx.co.id.

Actual leverage acts as dependent variable, while lagged leverage, profitability, liquidity, tangibility, non-debt tax shield, bankruptcy risk and firm size are the independent variables. Table I presents a summary of variable and the measurement used in the study.

Table I: Variables and Measurement

Variable	Measurement
Leverage	Long term debt to total assets ratio
Lagged Leverage	Long term debt to total assets ratio in previous year
Profitability	Return on assets ratio
Liquidity	Current ratio
Tangibility	Fixed assets to total assets ratio
Non-debt Tax Shield	Depreciation expense to total assets ratio
Bankruptcy risk	Interest coverage ratio
Firm Size	Log total assets

Partial adjustment model estimated through Generalized Method of Moment will be used to analyze the dynamic model of leverage decision in this study. According to Haron (2016), Generalized Method of Moment is applied because it suits the dynamic model analysis to identify both unobserved target leverage and speed of adjustment. In addition, technique Generalized Method of Moment First Difference is chosen to avoid the correlation between unobserved specific effects and explanatory variables (Arellano & Bond, 1991). Testing model refers to equation (5) and its proxies that could be expressed as follows:

$$Lev_{i,t} = \lambda_{01}Lev_{i,t-1} + \lambda_1 ROA_{i,t} + \lambda_2 CR_{i,t} + \lambda_3 Tang_{i,t} + \lambda_4 NDTS_{i,t} + \lambda_5 IC_{i,t} + \lambda_6 Size_{i,t} + \mu_{i,t}$$

(6)

, where:
δ = speed of adjustment;
β_k = coefficient;
$\lambda_0 = 1-\delta$;
$\lambda_k = \delta\beta_k$;
$\mu_{i,t} = \delta\varepsilon_{i,t}$;
$Lev_{i,t}$ = leverage;
$Lev_{i,t-1}$ = lagged leverage;
$ROA_{i,t}$ = return on assets;
$CR_{i,t}$ = current ratio;
$Tang_{i,t}$ = tangibility;
$NDTS_{i,t}$ = non-debt tax shield;
$IC_{i,t}$ = interest coverage;
$SIZE_{i,t}$ = firm size.

Multicollinearity is used as diagnostic test to ensure the estimation model. Multicollinearity test is used to confirm that there is no correlation among the independent variables (Ghozali, 2013). Hypothesis testing of the study could be summarized as follows.

Table II: Hypothesis Testing Summary

	Research Hypothesis	Conditions
H1	Lagged leverage positively affects leverage	$\beta > 0$
H2	Profitability positively affects leverage	$\beta > 0$

H3	Liquidity positively affects leverage	β > 0
H4	Tangibility positively affects leverage	β > 0
H5	Non-debt tax shield negatively affects leverage	β < 0
H6	Bankruptcy risk negatively affects leverage	β < 0

Hypothesis will be accepted only if p-value for each variable is less than significance level of 0.05 and variable coefficient confirms the condition for each hypothesis.

Result and Discussion

Table III: Descriptive Statistics

	Mean	Median	Maximum	Minimum
LEV (%)	21.53	18.21	84.63	0.03
ROA (%)	4.91	5.20	34.39	-27.61
CR (%)	108.97	111.35	199.33	15.27
TANG (%)	43.32	42.17	96.26	1.65
NDTS (%)	4.21	3.67	21.21	0.12
IC (%)	487.93	340.19	3088.23	-704.04
SIZE (trillions Rp)	7.49	1.93	166.17	0.02

Table III describes the descriptive statistics of the sample. Non-financial listed firms in Indonesia during the study period have a mean leverage of 21.53% with leverage range from 0.03% to 84.63%. It can be concluded that there is no firm that either completely use debt financing or pure equity financing. Although there is a firm that suffers sufficient loss at 27.61%, but most of the firms are said to be able to generate profit, indicated from mean profitability value of 4.91%. In term of liquidity, the sample indicates that on average, the firms can satisfy its short term liability with average value of liquidity ratio of 108.97%. Fixed assets contribute as the biggest portion on the firms' assets with average value of 43.32%. Power plant firm has the maximum value of tangible assets while pharmacy and medical supply distributor has the least portion of fixed assets. Non-debt tax shield has mean value of 4.21% of its total assets while interest coverage shows the ability to satisfy its interest with the average value of 487.93%. On the average, non-financial listed companies in Indonesia own 7.49 trillion rupiah of assets. PT Telekomunikasi Indonesia is the biggest firm measured by the total assets while PT Zebra Nusantara is assumed to have the least number of total assets.

Table IV: Multicollinearity Test

	Lev(-1)	ROA	CR	TANG	NDTS	IC	SIZE
Lev(-1)	1.0000						
ROA	-0.0681	1.0000					
CR	-0.2134	0.3391	1.0000				
TANG	0.4178	-0.1582	-0.3650	1.0000			
NDTS	0.2524	-0.1143	-0.3336	0.5154	1.0000		
IC	-0.1958	0.4334	0.2153	-0.0076	0.0909	1.0000	
SIZE	0.3291	0.1097	-0.1093	0.1769	0.0362	0.1052	1.0000

For Multicollinearity test purposes, the result is presented at table IV. The highest correlation occurs between non-debt tax shield and tangibility with value of 0.5154. The existence of negative correlations is found in lagged leverage to profitability, liquidity and business risk; profitability to tangibility and non-debt tax shield; liquidity to tangibility, non-debt tax shield and firm size; tangibility to business risk, while the rest is found in positive correlation. There is no correlation value that is larger than 0.95, thus all variables are included in model analysis.

Table V: Data Estimation Results

Variable	Expected Sign	Results
Lev(-1)	+	0.219492***
ROA	+	-0.293749***
CR	+	0.112591***
TANG	+	0.291659***
NDTS	-	0.096918
IC	-	-0.000693
SIZE	+	0.000569
J-statistics		45.79340
Speed of Adjustment (1- λ₀)		0.780508
No. of Observations		500

Notes: (***), (**), (*) denotes significance level at 0.01, 0.05, and 0.10 respectively

Results of testing model shows that lagged leverage (Lev(-1)), liquidity (CR) and tangibility (TANG) positively affect the leverage at significance level of 1% while profitability (ROA) is found to significantly affect leverage in negative manner. In other hand, non-debt tax shield (NDTS) and bankruptcy risk (IC) are found to not significantly affect leverage decision.

The results could be described in detail as follows. The positive effect of lagged leverage supports the existence of dynamic trade off theory in capital structure decision of non-financial listed firms in Indonesia. Firms are said to pursue the target leverage in order to achieve the optimal target leverage to maximize the firms' value. This findings support several past studies of dynamic trade off theory done by Versmissen and Zietz (2017); Ting (2016); Haron (2016). The adjustment process defines the value of speed of adjustment by 78.05% annum.

This indicates that each year, firms are able to close the actual-desired leverage gap by 78.05%. In other words, firms are said to achieve its target in ±1.28 years.

Other findings that confirm the existence of trade off theory are liquidity and tangibility. Liquidity represents the ability to satisfy the current liabilities and to generate internal cash flow support the credibility of borrower in term of capacity. Meanwhile, tangibility shows the relative portion of firms' assets that could be used as collateral in debt funding. Both aspects encourage firm to adjust its leverage to its target leverage optimal. These findings are in line with Kaur and Rao (2009); Nunkoo and Boateng (2010).

Profitability is found to affect leverage decision in negative manner. This is the opposite of the research hypothesis that expect the positive relationship between profitutility and leverage decision. The negative effect confirms the indication of pecking order theory. Management considers internal fund for financing activities that later will be supported by debt financing when the internal fund is not sufficient enough to fulfill the operational or investment needs. Hence, it could be concluded that the dynamic trade-off theory implementation in non-financial listed firms in Indonesia is not mutually exclusive. The results confirms several previous studies of leverage decision done by Rossi, Lombardi, Nappo and Trequattrini (2015); Chakraborty (2010).

Non-debt tax shield, as an alternative tax saving other than interest expense, is found not significantly affect leverage decision. The research hypothesis stated that when the firm is able to generate high profitability, it will choose non-debt tax shield over interest expense to provide tax benefit. In fact, non-debt tax shield is not treated as substitute for interest expense because of its sticky value. Depreciation expense used as proxy for non-debt tax shield is highly depended on the firm's depreciable assets. Such assets usually have significant values with consistent policy of depreciation. In other hand, there is also a taxation rule that signify the common depreciation tariff for each category of depreciable assets. This keeps the deductible expense from depreciation in certain reasonable range. Therefore, it is difficult to define the effect of non-debt tax shield on leverage decision. This finding is aligned with Sheikh and Wang (2011) and Tian (2013) that find no sufficient evidence to conclude the relationship between non-debt tax shield and leverage decision.

Business risk, measured by interest coverage ratio, is also not significantly affecting leverage decision. This aligns with Suratno, Djaddang and Ghozali (2017). Low ability to generate internal funding, as confirmed in second hypothesis, leads to additional external debt financing. However, with high volatility of earning compared to relative small changes in interest expense makes it difficult to find sufficient evidence of relationship between interest coverage and leverage decision. The last variable, firm size, is also not significantly affect the leverage decision. Even though larger firms have more sufficient collateral and better access to debt financing, this is not directly make the larger company uses more debt. Confirmed in hypothesis 2, manager also considers the availability of internal funding while seeking for the target leverage optimal. The result is aligned with Cortez and Susanto (2012); Hossain and Ali (2012); Alom (2013).

Conclusion

In dynamic trade off theory testing, lagged leverage is found to significantly affect the leverage decision. It indicates that firms do pursue its target leverage with speed of adjustment of 78.05%. This could be a sufficient evidence of the dynamic trade-off theory implementation in non-financial listed firms leverage behavior. Determinants factors found significantly affect leverage decision in this study are profitability, liquidity and tangibility. Liquidity and tangibility also contributes to confirm the implementation of trade off theory in capital structure decision of non-financial listed firms in Indonesia. However, the negative effect of profitability on leverage decision indicates the existence of pecking order thinking. Therefore, the implementation of dynamic trade off theory is considered to be not mutually exclusive. Non-debt tax shield and bankruptcy risk are found to not significantly affect leverage decision.

The evidence of trade off theory and pecking order theory implementation show the importance of debt as primary, in trade off theory, as well as the second layer, in pecking order theory, in funding sources. Managers should consider benefit and cost of debt financing, the availability of internal funding and the timing to use external debt in order to achieve its optimal capital structure. Manager also may consider utilizing debt facilities other than bank loans that constitutes as the most widely used in Indonesia, such as corporate bonds. Corporate bonds hold several advantages; there are lower interest expense, higher liquidity and flexibility for future financing. In order to facilitate the easier access to various type of debt financing, government should improve the access and liquidity of bond market that encourage the investor and create an effective alternative debt financing for corporation.

Despite using recent data, the result of this study has not yet considered the alleged existence of asymmetric speed of adjustment from various firms-specific factors, such as leverage position, adjustment ability, adjustment cost and degree of actual-desired leverage gap. This would be considered in future research.

Acknowledgment

References

Alipour, M., Mohammadi, M.F.S. & Derakhshan, H. 2015. Determinants of capital structure: an empirical study of firms in Iran. International Journal of Law and Management, 57(1), 53-83.

Alom, K. 2013. Capital Structure Choice of Bangladeshi Firms: An Empirical Investigation. Asian Journal of Finance & Accounting, 5(1), 320-333.

Ameer, R. 2013. Financial Liberalization and Firms' Capital Structure Adjustments Evidence from Southeast Asia and South America. Journal of Economics and Finance, 37, 1-32.

Arellano, M. & Bond, S. 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. The Review of Economic Studies, 58(2), 277-297.

Arvanitis, S.H., Tzigkounaki, I.S., Stamatopoulos, T.V., & Thalassinos, E.I. 2012. Dynamic Approach of Capital Structure of European Shipping Companies. International Journal of Economic Sciences and Applied Research, 5(3), 33-63.

Bank Indonesia. (2016, Dec 19). Retrieved Apr 12, 2017, from www.bi.go.id: http://www.bi.go.id/en/iru/economic-data/external-debt/Pages/SULNI-Desember-2016.aspx

Brigham, E.F. & Ehrhardt, M.C. 2014. Financial Management Theory & Practice 14e . Canada: South-Western Cengage Learning.

Chakraborty, I. 2010. Capital Structure in An Emerging Stock Market: The Case of India. Research in International Business and Finance, 24, 295-314.

Cortez, M.A. & Susanto, S. 2012. The Determinants of Corporate Capital Structure: Evidence from Japanese Manufacturing Companies. Journal of International Business Research, 11(3), 121-134.

Eldomiaty, T.I. 2007. Determinants of Corporate Capital Structure: Evidence from An Emerging Economy. International Journal of Commerce and Management, 17(1/2), 25-43.

Fischer, E.O., Heinkel, R. & Zechner, J. 1989. Dynamic Capital Structure Choice: Theory and Tests. The Journal of Finance, 44(1), 19-40.

Ghasemi, M. & Razak, N.H.A. 2016. The Impact of Liquidity on the Capital Structure: Evidence from Malaysia. International Journal of Economics and Finance, 8(10), 130-139.

Ghozali, I. 2013. Aplikasi Analisis Multivariate dengan Program IBM SPSS 21 Update PLS Regresi Edisi 7. Semarang: Badan Penerbit Universitas Diponegoro.

Gitman, L.J., & Zutter, C.J. 2012. Principles of Managerial Finance Thirteenth Edition. Boston: Prentice Hall.

Haron, R. 2016. Do Indonesian Firms Practice Target Capital Structure? A Dynamic Approach. Journal of Asia Business Studies, 10(3), 318-334.

Hossain, M.F. & Ali, M.A. 2012. Impact of Firm Specific Factors on Capital Structure Decision: An Empirical Study of Bangladeshi Companies. International Journal of Business Research and Management, 3(4), 163-182.

Huang, G. & Song, F.M. 2006. The determinants of capital structure: Evidence from China. China Economic Review, 17(2006), 14-36.

Kaur, R. & Rao, N.K. 2009. Determinants of Capital Structure: Experience of Indian Cotton Textile Industry. The XIMB Journal of Management, 6(2), 97-112.

Keown, A.J., Martin, J.D., & Petty, W. J. 2014. Foundation of Finance. New Jersey: Pearson Education.

Koksal, B. & Orman, C. 2015. Determinants of Capital Structure: Evidence from A Major Developing Economy. Bus Econ (2015) 44: 255. https://doi.org/10.1007/s11187-014-9597-x

Kraus, A. & Litzenberger, R.H. 1973. A State-Preference Model of Optimal Financial Leverage. The Journal of Finance, 28(4), 911-922.

Memon, P.A., Rus, R.B.M. & Ghazali, Z.B. 2015. Firm and Macroeconomic Determinants of Debt: Pakistan Evidence. Procedia - Social and Behavioral Sciences, 172(2015), 200-207.

Nunkoo, P. K., & Boateng, A. 2010. The Empirical Determinants of Target Capital Structure and Adjustment to Long-Run Target: Evidence from Canadian Firms. Applied Economics Letters, 17, 983-990.

Olakunle, A.O. & Jones, P.L. 2014. Assessing the Impact of Size on the Capital Structure Choice for Listed Nigeria Firms. International Journal of Academic Research in Business and Social Sciences, 4(7), 184-202.

Olakunle, A.O. & Oni, E.O. 2014. Assessing the Impact of Asset Tangibility on Capital Structure: Choice for Listed Firms in Nigeria. Journal of Applied Economics and Business, 2(3), 5-20.

Oztekin, O. & Flannery, M.J. 2012. Institutional Determinants of Capital Structure Adjustment Speeds. Journal of Financial Economics, 103, 88-112.

Ross, S.A., Westerfield, R.W., Jaffe, J. & Jordan, B.D. 2016. Corporate Finance Eleventh Edition. New York: McGraw-Hill.

Rossi, M., Lombardi, R., Nappo, F. & Trequattrini, R. 2015. The Capital Structure Choices of Agro-Food Firms: Evidence from Italian SMEs. International Journal Management Practices, 8(3), 172-186.

Sheikh, N.A. & Wang, Z. 2011. Determinants of Capital Structure: An Empirical Study of Firms in Manufacturing Industry of Pakistan. Managerial Finance, 37(2), 117-133.

Suratno, Djaddang, S. & Ghozali, I. 2017. The Role of Business Risk and Non Debt Tax Shields to Debt to Equity Ratio on Pharmacy Listed Companies in Indonesia. International Journal of Economics and Financial Issues, 7(2), 73-80.

Syarkani, Y. 2016. Biaya Keagenan dan Investasi terhadap Dividen serta Implikasinya pada Leverage dalam Konteks Perubahan Struktur Modal. Unpublished Thesis.

Tian, M. 2013. A Study of Characteristics and Determinants of Capital Structure in the US Context. Unpublished Dissertation.

Ting, I.W.K. 2016. Estimating Dynamic Panel Model of Leverage Decision: Evidence from Malaysia. Procedia Economics and Finance, 35, 267-273.

Tsoy, L., & Heshmati, A. 2017. Impact of Financial Crises on Dynamics of Capital Structure: Evidence from Korean Listed Companies. IZA Discussion Paper No.10554, 5-31.

Versmissen, J. & Zietz, J. 2017. Is There a Leverage Target for REITs? The Quarterly Review of Economics and Finance, 66, 57-69.

Widarjono, A. 2016. Ekonometrika Pengantar dan Aplikasinya Disertai Panduan EViews Edisi Keempat. Yogyakarta: UPP STIM YKPN.

Zhang, Y. 2010. The Product Category Effects on Capital Structure: Evidence from the SMEs of British Manufacturing Industry. International Journal of Business and Management, 5(8), 86-112.

List of Authors:

Septianti Chairunnisa
Padjajaran University, Dipatiukur
Bandung, Indonesia
Email: septianti.chairunnisa.3092@gmail.com

Rachmat Sudarsono
Padjajaran University, Dipatiukur
Bandung, Indonesia

Benny Budiawan Tjandrasa
Padjajaran University, Dipatiukur
Bandung, Indonesia